

PILE FABRIC

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The invention relates to a pile fabric comprising a textile support structure with a trimming consisting of pile threads anchored in the support structure.

According to the prior art (see EP 0 609 678 A1), it is known to use in connection with such a pile fabric employed as a textile material for cleaning purposes pile threads with a varying titer, whereby selected surface areas have pile threads with a particularly high titer, and other surface areas pile threads with a low titer. The pile threads with a high titer are in this connection expected to have a highly abrasive cleaning effect, and the pile threads with a low titer good absorptive power for absorbing the cleaning liquid.

Problems arise in connection with the known pile fabric to the extent that viewed across the surface area, the cleaning effect is not the same everywhere, and that especially the surface areas with pile threads with a low titer lose their volume quickly because the pile threads with the low titer bend over and come to lie flat. Further problems result from the fact that the stiff pile threads with the high titer can only poorly be anchored in the support structure and have to be glued to or fused with the

latter, so that they will not become detached from the textile support structure prematurely.

Therefore, the problem of the invention is to provide a pile fabric of the type specified above that has good properties uniformly across the entire surface area, i.e. good abrasive and absorbent effects and retains its full volume everywhere. Furthermore, the goal is to improve the mechanical anchoring of the stiff pile threads in the textile support structure.

For solving said problem, the invention proposes based on a pile fabric of the type specified above that the pile threads all or partially consist of a multi-filament yarn that contains pile filaments on the one hand, and coarse filaments on the other, with the titer of the coarse filaments amounting to 25 times the titer of the fine filaments.

The pile fabric according to the invention employs for the pile threads for the first time a multi-filament yarn comprised of coarse and fine filaments with titers that are very widely apart, whereby the coarse filaments provide the pile thread with high stiffness, high resetting capability and a high scratching effect, and the fine filaments provide such a pile thread with high absorptive power. The mixture between the coarse and the fine filaments is particularly

intimate in this connection, so that the pile fabric exhibits uniform properties over its entire surface area. Owing to the fact that the coarse and the fine filaments are twisted with each other in the pile threads, particularly durable anchoring of the pile threads in the textile support structure is obtained in spite of the high stiffness of the individual pile threads, whereby the textile support structure may be present in the form of fabrics or knitted textile materials. Especially the fine filaments, which are closely joined with the coarse filaments, effect particularly solid anchoring and clamping in the textile support structure.

According to a first embodiment of the pile fabric as defined by the invention, provision is made that the fine filaments have a titer of from 0.2 to 5 dtex. Filaments with such a degree of fineness are particularly absorbent and capable of storing relatively much liquid. With such fine filaments it is possible to achieve a number of up to 100,000 individual filaments per square centimeter with a capillary effect that is correspondingly high. Each pile thread retains nonetheless its stiffness and remains elastically resettable because of the filaments with a high titer contained therein.

The fine filaments are usefully made of polyester and the coarse elements of polyamide. Pile threads comprised of such

a material pairing are stiff, on the one hand, and absorbent on the other, and, furthermore, are capable of readily giving off again any absorbed liquid.

The filaments in the pile threads all have usefully the same length. The goal achieved in this way is that the pile fabric is supportive and at the same time absorptive on its surface, i.e. in the area of the distal ends of the individual pile threads. On account of its properties, such a pile fabric is particularly suited as a cover pile fabric for a paint roller applicator. Because of the high stiffness of the coarse filaments, such a cover pile fabric is not pressed flatly onto the surface to be painted when the paint roller applicator is used. On the other hand, due to the capillary effect, the fine filaments transport the paint to be applied into the region of the tips of the individual pile threads, which leads to a particular uniform application of the paint.

According to another exemplified embodiment of the pile fabric as defined by the invention, provision is made that the fine filaments have a titer of from 0.2 to 5 dtex and the coarse filaments a titer of more than 18 dtex. This supplies a pile fabric that has a particularly strong abrasive effect, which means such a pile fabric is especially suited for use as a textile material for cleaning purposes.

For increasing the abrasive effect further, the fine filaments may be crimped to a higher degree than the coarse filaments, if need be. This causes the coarse filaments to extend beyond the fine filaments, so that the effect of a brush is obtained on the surface of the pile fabric.

According to a third embodiment, provision is made that the fine filaments have a titer of from 0.05 to 6.7 dtex and the coarse filaments a titer of from 1.25 to 170 dtex. The fine filaments are in this connection made of polypropylene (PP) and/or viscose and/or polyacrylo-nitrile, and the coarse filaments consist of polyester (PES) and/or polyvinyl chloride (PVC) and/or polycarbonate (PC). Such a pile fabric can be adapted to all kinds of different application purposes.

Such a pile fabric is particularly suited as a massaging mat or a massaging glove. In this connection, the coarse and the fine filaments either may have different widths or they may be crimped to the same extent depending on the desired massaging effect. If they are crimped to the same extent, a pile fabric is obtained that is uniformly soft on the surface and has a highly elastic volume.

On the other hand, if the coarse filaments are crimped to a lesser extent than the fine filaments, a relatively

aggressive surface is obtained that causes irritation of the skin, for example when it is used for massaging purposes. But if the coarse filaments, on the other hand, are crimped to a greater extent than the fine filaments, a particularly soft and carefully working surface is obtained which, however, is nonetheless highly supportive and elastic.

Exemplified embodiments of the invention are explained in greater detail in the following with the help of the drawing, in which:

FIG. 1 shows a schematic sectional view of a first embodiment of a pile fabric as defined by the invention produced by the double-pile process.

FIG. 2 shows a schematic sectional view of a second embodiment of a pile fabric as defined by the invention produced by the double-pile process.

FIG. 3 shows a schematic section view of a third embodiment of a pile fabric as defined by the invention produced by the double-pile process.

In FIG. 1, the textile support structure of the pile fabric, in the present case a backing fabric, is denoted in its entirety by the reference numeral 1. Said pile fabric is

comprised of warp threads not shown, and the wefts 2 extending perpendicular to the former.

The pole threads 3 are anchored in said textile support structure 1 and guided around adjacent wefts and cut off at both ends in such a way that their distal end sections extend about perpendicular to the main plane of expanse of the textile support structure 1.

The pile threads 3 of the pile fabric all, or at least for the major part consist of a multi-filament yarn that contains the fine filaments 4, on the one hand, and the coarse filaments 5 on the other, whereby the titer of the coarse filaments amounts to more than 25 times the titer of the fine filaments 4.

If the pile fabric is employed as a cover for a paint roller applicator, the fine filaments 4 have a titer of, for example from 0.2 to 5 dtex. The titer of the associated coarse filaments 5 is at least 25 times greater in each case. Therefore, if the fine filaments have a titer of 0.2 dtex, the coarse filaments have a titer of more than 5 dtex. On the other hand, if the fine filaments have a titer of 5 dtex, the coarse filaments have a titer of more than 25 dtex.

In the exemplified embodiment according to FIG. 1, the coarse filaments 5 and the fine filaments 4 are equally long. The fine filaments 4 are made of polyester in this connection, and the coarse filaments 5 are produced from polyamide. Such a material pairing is particularly suited for paint roller applicators. The coarse filaments 5 support the paint roller applicator in this connection in the plane of contact over the circumference of the roller against the surface to be coated with paint. The fine filaments, on the other hand, owing to their extremely good capillary effect, transport the paint up into the range of said surface. Such a paint roller applicator achieves a particularly uniform application of the paint and exhibits relatively minor tendency to splashing.

If the pile fabric is to be employed as a textile material for cleaning purposes, the fine filaments have a titer of from 0.2 to 5 dtex and the coarse filaments a titer in excess of 18 dtex. If, as in the exemplified embodiment according to FIG. 2, the fine filaments 4 are crimped to a greater extent than the coarse filaments 5, a particularly rough and abrasively active surface of the pile fabric is obtained.

On the other hand, if, as in the exemplified embodiment according to FIG. 3, the coarse filaments 5 are crimped to a greater extent than the fine filaments 4, a textile material

with a particularly soft surface is obtained that nonetheless has a particularly elastic volume.

An adaptation to all kinds of different cases of application is possible if the fine filaments have a titer of from 0.05 to 6.7 dtex and the coarse filaments a titer of from 1.25 to 170 dtex. Especially the materials polypropylene (PP), viscose or polyacrylonitrile (PAN) are suitable for the fine filaments. On the other hand, the materials polyester (PES) or polyvinyl chloride (PVC) or polycarbonate (PC) are advantageously employed for the coarse filaments. The pile fabric can be adapted to all sorts of different applications by selecting and pairing the materials as required, for example as a fabric for particularly soft or particularly aggressive massaging gloves, or as industrial textiles, for example for cleaning purposes, or as filter coatings or the like.